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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,209	06/20/2005	Jarmo Lindroos	04150.0019U1	7480

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EXAMINER	
CHOI, LING SIU	
ART UNIT	**PAPER NUMBER**
1713	

DATE MAILED: 11/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/526,209	LINDROOS ET AL.	
	Examiner	Art Unit	
	Ling-Siu Choi	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 March 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *03/03/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This Application is a 371 of PCT/EP 03/09803, filed September 4, 2003 and claims the Foreign Priority of United Kingdom 0220681.1, filed **September 4, 2003**.

2. This Office action is in response to the Preliminary Amendment filed March 3, 2005. Claims 1-15 are now pending, wherein claims 1- 9 are drawn to a process to prepare an unsupported catalyst for olefin polymerization; **claim 10 is drawn to a catalyst** obtained by the process claimed in claim 1; claims 11-12 are drawn to use of a catalyst; claims 13-14 are drawn to a process to prepare polyolefin; claim 15 is drawn to a process to prepare a prepolymerized catalyst and wherein claims 1, 12, and 15 are independent claims.

Claim Rejections - 35 USC § 112

3. **The following is a quotation of the second paragraph of 35 U.S.C. 112:**

> **The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.**

4. Claims 11-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 11-12 provide for the use of a catalyst, but, since the claims do not set

forth any steps involved in the method/process, it is unclear what method/process applicant is intending to

encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claims 11-12 are rejected under 35 U.S.C. 101 because the claimed recitation of a use, without setting forth any steps involved in the process, results in an improper definition of a process, i.e., results in a claim which is not a proper process claim under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd. App. 1967) and *Clinical Products, Ltd.* v. *Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

Claim Rejections - 35 USC § 102

5. **The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:**

> **A person shall be entitled to a patent unless --**
>
> **(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.**

6. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Ernst et al. (US 5,932,514).

A process to prepare an unsupported catalyst for olefin polymerization, comprising	
A	reacting an aluminoxane and a **Lewis base** in an optionally halogenated hydrocarbon solvent to form a particulate suspensipon
B	reacting the suspension with a metallocene complex in an optionally halogenated hydrocarbon solvent
C	isolating the catalyst
wherein the Lewis base is **aliphatic or aromatic amine, ether, phenol, benzyl alcohol, ethylene glycol, glycerol, bisphenol, triethanolamine, butanediol, 4,4'-isopropylidenediphenol, 3-hydroxypropylene oxide, or a mixture thereof**	

(summary of claim 1)

Ernst et al. disclose a catalyst for olefin polymerization, which is obtained by the process comprising the steps of (a) drying a hydrophilic inorganic oxide, (b) reacting the free hydroxyl groups of the oxide completely or partially with aluminoxane in toluene, (c) subsequently reacting the modified oxide with a polyfunctional organic crosslinker, and (d) further contacting with a metallocene, wherein the polyfunctional organic crosslinker can be ethylene glycol, 1,4-butanediol diglycidyl ether, triethanolamine, or glycerol (abstract; col. 3, lines 21-36; col. 4, lines 24-45; Example 1). Thus, the present claims are anticipated by the disclosure of Ernst et al.

7. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being anticipated by Fischer et al. [Makromol. Chem., Macromol. Symp. **66**, 191-202(1993)].

Fischer et al. disclose a catalyst for olefin polymereization, comprising (a)

contacting 2,6-ditertbutyl-4-methyl phenol (BHT) and 2,2,6,6-tetramethylpiperidine (TMP) with methylaluminoxane (MAO) and then (b) contacting with a zirconocene in toluene (abstract; page 193, lines 5-7). Thus, the present claims are anticipated by the disclosure of Fischer et al.

8. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Brady III et al. (EP 0 630 910 A1).

Brady III et al. disclose a catalyst for olefin polymerization, comprising a metallocene, aluminoxane, and a Lewis Base, wherein the Lewis base is ether, alcohol [ethylene glycol, phenol], or amine (page 7, lines 30-33; claims 1-2). Thus, the present claims are anticipated by the disclosure of Fischer.

9. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Canich et al. (WO 93/13140).

Canich et al. disclose a catalyst system comprising a monocyclopentadienyl Group IVB transition metal compound, an alumoxane, and a modifier, wherein the modifier is a Lewis base comprising ethylamine, diethylamine dimethylanaline, ethanol, and phenol (abstract; page 19, lines 23-36). Thus, the present claims are anticipated by the disclosure of Canich et al.

10. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Goode et al. (WO 98/20045).

Goode et al. disclose an unsupported, liquid form catalyst composition comprising a single site catalyst, an activating cocatalyst, and an antifouling agent, wherein the antifoouling agent includes ether, alcohol [ethylene glycol or phenol], and amine (abstract; pages 18-21). Thus, the present claims are anticipated by the disclosure of Goode et al.

11. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Nagy et al. (US 6,025,407).

Nagy et al. disclose a catalyst for olefin polmerization, comprising a metallocene, an aluminum-containing cocatalyst, and a Lewis base, wherein the aluminum-containing cocatalyst ia alkyl aluminoxane and the Lewis base includes ether and amine(abstract; col. 7, lines 59-67; col. 8, lines 1-67). Thus, the present claims are anticipated by the disclosure of Nagy et al.

12. Claim 10 is rejected under 35 U.S.C. 102(b) as being anticipated by Rosch (US 5,908,903).

Rosch discloses a catalyst for olefin polymerization, comprising (A) a metallocene complex of the metals of the fourth, fifth, or sixth transition group of the Periodic Table of the Elements, (B) a compound forming metallocenium ions, and (C) a sterically hindered, organic Lewis base, wherein the compound forming metallocenium ions includes methyl aluminoxane and the sterically hindered, organic Lewis base includes amine (abstract; col. 6, lines 61-63; col. 7, lines 23-30). Thus, the present

claims are anticipated by the disclosure of Rosch.

Claim Rejections - 35 USC § 103

13. **The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:**

> **(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.**

14. Claims 1-9 and 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brady III et al. (EP 0 630 910 A1), Canich et al. (WO 93/13140), Goode et al. (WO 98/20045), Nagy et al. (US 6,025,407), or Rosch (US 5,908,903).

Brady III et al. disclose a process to prepare a catalyst comprising a metallocene, aluminoxane, and a Lewis Base, wherein the Lewis base is ether, alcohol [ethylene glycol, phenol], or amine (page 7, lines 30-33; claims 1-2).

Canich et al. disclose a process to prepare a catalyst system comprising a monocyclopentadienyl Group IVB transition metal compound, an alumoxane, and a modifier, wherein the modifier is a Lewis base comprising ethylamine, diethylamine dimethylanaline, ethanol, and phenol (abstract; page 19, lines 23-36).

Goode et al. disclose a process to prepare an unsupported, liquid form catalyst composition comprising a single site catalyst, an activating cocatalyst, and an antifouling agent, wherein the antifoouling agent includes ether, alcohol [ethylene glycol

or phenol], and amine (abstract; pages 18-21).

Nagy et al. disclose a process to prepare a catalyst comprising a metallocene, an aluminum-containing cocatalyst, and a Lewis base, wherein the aluminum-containing cocatalyst ia alkyl aluminoxane and the Lewis base includes ether and amine(abstract; col. 7, lines 59-67; col. 8, lines 1-67).

Rosch discloses a process to prepare a catalyst comprising (A) a metallocene complex of the metals of the fourth, fifth, or sixth transition group of the Periodic Table of the Elements, (B) a compound forming metallocenium ions, and (C) a sterically hindered, organic Lewis base, wherein the compound forming metallocenium ions includes methyl aluminoxane and the sterically hindered, organic Lewis base includes amine (abstract; col. 6, lines 61-63; col. 7, lines 23-30).

The difference between the present claims and the disclosures of Brady III et al., Canich et al., Goode et al., Nagy et al., or Rosch is the requirement of a specific order in contacting aluminoxane with a Lewis base prior to the contact with a metallocene complex in the present invention.

The case law held that "selection of any order pof performing process steps is prima facie obvious in the absence of new or unexpected results." ***In re Burhans***, 154 F.2d 690, 69 USPQ 330(CCPA 1946). "Selection of any order of mixing ingredients is prima facie obvious." ***In re Gibson***, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to adapt the claimed order and thereby obtain the present claims.

15. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ernst et al. (US 5,932,514) or Fischer et al. [Makromol. Chem., Macromol. Symp. **66**, 191-202(1993)], either one in view of Speca et al. (WO 97/02297).

Ernst et al. disclose a process to polymerize an olefin in the presence of a catalyst which is obtained by the process comprising the steps of (a) drying a hydrophilic inorganic oxide, (b) reacting the free hydroxyl groups of the oxide completely or partially with aluminoxane in toluene, (c) subsequently reacting the modified oxide with a polyfunctional organic crosslinker, and (d) further contacting with a metallocene, wherein the polyfunctional organic crosslinker can be ethylene glycol, 1,4-butanediol diglycidyl ether, triethanolamine, or glycerol(abstract; col. 3, lines 21-36; col. 4, lines 24-45; Example 1).

Fischer et al. disclose a catalyst for olefin polymereization, comprising (a) contacting 2,6-ditertbutyl-4-methyl phenol (BHT) and 2,2,6,6-tetramethylpiperidine (TMP) with methylaluminoxane (MAO) and then (b) contacting with a zirconocene in toluene (abstract; page 193, lines 5-7). Thus, the present claims are anticipated by the disclosure of Fischer et al.

The difference between the present claims and the disclosure of Ernst et al. or Fischer et al. is the requirement of prepolymerizing the catalyst in the present invention.

Speca et al. disclose a process to polymerize an olefin in the presence of a prepolymerized metallocene catalyst system (abstract). Speca et al. further disclose that "prepolymerization reduces fouling by preventing fracture of the supported catalyst system particle" (page 1, lines 32-35). In view of such benefit, it would have been

obvious to one of ordinary skill in the art at the time the invention was made to adapt the prepolymerization step in preparing the catalyst for olefin polymerization and thereby obtain the present invention.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling-Siu Choi whose telephone number is 571-272-1098.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reach on 571-272-1114.

LING-SUI CHOI
PRIMARY EXAMINER

October 26, 2005